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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Waste Disposal System

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(57) 16 Claims

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ABSTRACT

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5      A modular waste sorting and storage system  
comprising a sliding frame structure adapted to be  
secured in a cupboard, one or more modular wire frames  
adapted to hold waste receiving apparatus, and apparatus  
for removably attaching the one or more modular wire  
frames to the sliding frame structure.

WASTE DISPOSAL SYSTEM

This invention relates in general to garbage disposal systems, and more particularly to a modular domestic waste sorting and storage system.

5       Recent heightened environmental concerns have led to an increase in community recycling programs. In accordance with such programs, citizens are asked to separate their household refuse into various recycling categories, such as glass (e.g. bottles and jars), paper,  
10       and organic waste.

      A number of prior art domestic waste separation and storage systems have been developed. One such system is manufactured by Hailo-Werk Rudolph Loh GmbH and Co. KG under the trade name Tandem 3650. The Hailo device is  
15       designed for mounting beneath a sink or in a cupboard, etc. Two receptacle bins are suspended within a frame designed to slide on rollers from the storage position to an open position. A stationary pivoted lid is provided which opens as a result of a camming surface on the  
20       retractable frame urging the lid upwardly when the frame and bins are retracted. The stationary lid is of complex design and has been found to be difficult to clean due to its stationary and fixed location beneath the kitchen  
25       sink, or in a cupboard, etc. Furthermore, because of the unitary lid design, the lid opens whenever the frame is retracted. Thus, where the household consumer wishes to discard only of a bottle, but does not wish to have access to the discarded food bin, the lid nonetheless  
30       opens, resulting in exposure to food odours, etc. The Hailo product is of strictly dual bin design, and includes no modular features. Numerous other storage systems are known, many of which suffer from the same disadvantages.

      According to one aspect of the present invention, a  
35       waste disposal system is provided which is of modular design, and incorporates a sliding frame and separate lids for each bin, such that access to one storage bin does not necessitate opening the lid to the other storage bin. Furthermore, the modular design of the system in

accordance with the present invention allows for dual or single bin installation, as well as installation of bins remote from the sliding frame.

5 An aspect of the invention is defined by a modular waste sorting and storage system comprising a sliding frame structure adapted to be secured in a cupboard, one or more modular wire frames adapted to hold waste receiving means, and means for removably attaching said one or more modular wire frames to said sliding frame  
10 structure.

A further aspect of the invention is defined by a two-way storage system for separating waste and recyclable matter, comprising a wire rack adapted to be secured to a cupboard door, said wire rack further  
15 comprising a pair of rectangular downwardly extending wire portions for receiving respective outside handles of a pair of bags to be supported, a central stabilizer bar for connection between said door and said wire rack, and a centrally disposed further downwardly extending portion  
20 having a sheet metal portion thereon defining a pair of oppositely disposed forks for receiving respective inside handles of said pair of bags to be supported.

Further aspects of the present invention will be described in detail below with reference to the following  
25 drawings, in which:

Figure 1 is a perspective view of the system according to the present invention;

Figure 2 is a view of the system according to the present invention installed beneath a kitchen counter  
30 top;

Figure 3 is an exploded view showing the bin and wire frame construction of the system;

Figure 4 is a cross-section side elevation view of the system;

35 Figure 5 is a perspective view showing installation of the frame structure according to the system of the present invention;

Figure 6 is a detailed view of the roller assembly of the frame in accordance with the present invention;

Figure 7 is a perspective view of a first alternative embodiment of the system according to the present invention; and

Figure 8 is a perspective view of a further alternative embodiment of the system according to the present invention.

Turning to Figures 1 and 2, the system is shown generally by reference numeral 1, and comprises a pair of bins 3 resting on respective wire frames 5. A pair of lids 7 are pivotally mounted to the wire frames 5 as shown in greater detail with reference to Figure 3, for enabling access to the bins 3.

The wire frames 5 are removably mounted to a sliding frame structure 9 shown in greater detail with reference to Figures 5 and 6.

As shown in Figure 1, the dual bin design can be used to separate garbage into various recycling categories (e.g. bottles in one bin and paper in another). The entire unit 1 may be mounted in a cupboard 11 beneath a kitchen counter (Figure 2) in order to provide easy access to the bins 3.

As shown in Figure 3, the bin 3 is easily inserted and removed from the wire frame 5, and the lid 7 pivots on an upper horizontal portion of the wire frame 5 so as to provide access to the bin 3. Accordingly, both the bin 3 and lid 7 may be easily removed for cleaning, etc. In addition, the wire frame 5 is shown resting in cooperatively dimensioned pairs of key-hole shaped slots 13 in an upper portion 15 of the frame 9 (see Figure 6). The slots 13 hold the wire frame 5 securely in place, yet also allow the wire frame 5 to be removed for cleaning. The wire frame 5 may alternatively be separately mounted at any other convenient location apart from the frame structure 9, such as the side door 17 of the cupboard shown in Figure 2.

The modular approach to the system of the present invention results in significant flexibility of installation design over prior art systems.

Turning to Figures 4, 5 and 6, the mounting frame 9 is shown in greater detail comprising upper rectangular frame portion 15 having depending wheels 19 at respective end corners thereof, the wheels 19 being designed to roll within corresponding dimensioned guides 21 of a lower frame portion 23. The lower frame portion 23 includes additional wheels 25 projecting from the front thereof, adapted to support a surrounding rim portion 27 of the upper frame portion 15. The guide 21 has upper and lower horizontal surfaces for ensuring proper stability of the frame when in the retracted position (i.e. the centre of gravity of the combination frame 15 and bins 3 being offset from the centre of the lower frame 23).

As can be seen from Figure 6, the upper frame 15 and lower frame 23 are also of modular design such that the sliding upper frame 15 may be easily removed for cleaning, servicing, etc.

As shown in Figures 4 and 5, the lower frame 23 may be secured within the cupboard 11 by means of a plurality of screws 29 in a straightforward manner.

In use, the household consumer may install the wire frame 15 and associated pivoting and attachable lid 7 on the upper sliding frame structure 15, or alternatively by means of brackets or clips (not shown) directly onto a vertical surface such as a wall, or the inside door 17 of the cupboard 11. Refuse may be easily stored by simply sliding the frame 15 and associated frames 5 and bins 3 to an extracted position, lifting one or both of the lids 7 to an opened position, and placing refuse within the bins 3. In order to discard of the refuse, the lids 7 may be opened and the bins 3 simply removed for emptying.

According to the embodiment of Figure 7, a pair of bag holders 31 are provided for holding up to three plastic, paper or reusable cloth bags 33 (shown in

phantom). Each of the wire frame bag holders comprises a pair of hinged rectangular wire frame portions adapted for insertion into the slots 13 of upper rectangular frame portion 15 in the same manner as discussed with reference to the preferred embodiment of Figures 1-6. Each of the rectangular frame portions comprising bag holders 31 is also characterized by a rectangularly bent portion at the top thereof for insertion through handle apertures of the bags 33.

In operation, the system of Figure 7 may be used to separate cans, bottles, plastic, etc., into one bag; newspaper, reusable bags, etc. into the second bag; and garbage, compost, etc. into the third bag. When a bag 33 is full, it can be simply removed from the rack or bag holder 31 for discarding.

In Figure 8, a further alternative embodiment is illustrated in which a wire frame rack 35 is mounted directly to the inside of door 17 of the cupboard 11. The wire frame rack 35 may be adapted to hold two bags (not shown) for separating waste from recyclable matter, or to separate different varieties of recyclable matter (e.g. cans from glass, etc.). The mounting of rack 35 is effected by two hook-shaped clips 37 and a stabilizer bar 39 which are secured to the door 17. Although not shown, the embodiment of Figure 8 may also be provided with a pair of lids pivotally mounted on upper wire frame member 41 to cover respective ones of the bags, or a single lid adapted to cover both bags.

A central member 43 is provided with a stamped-out sheet metal portion 45 having oppositely disposed forks 47. In order to hang a bag, one bag is wrapped over top of the wire frame rack 35 and hooked onto the downwardly extending rectangular portion 51 while the other bag handle is hooked onto respective prongs or teeth of the oppositely disposed forks 47 adjacent the bag.

In summary, according to the present invention, a modular domestic waste sorting and storage system is

provided for separating waste and recyclable matter. The system can be easily mounted within a cupboard or to the inside of a cupboard door with a minimum of parts and complexity.

5        Furthermore, as discussed above, the modular aspect of the present invention permits each of the bins 3, lids 7, wire frames 5, and sliding frame 15 to be separately detachable and removable for easy cleaning in order to maintain proper hygiene.

10        Other embodiments and variations are possible within the sphere and scope of the claims appended hereto. For example, the upper rectangular frame portion 15 may be provided with additional U-shaped slots similar to the slots 13 arranged in pairs or otherwise, for  
15        accommodating further applications of wire frame or other structure to the sliding frame structure 9.



THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OF PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1.           A modular waste sorting and storage system  
5   comprising a sliding frame structure adapted to be  
     secured in a cupboard, one or more modular wire frames  
     adapted to hold waste receiving means, and means for  
     removably attaching said one or more modular wire frames  
     to said sliding frame structure.  
10
2.           The modular waste sorting and storage system of  
     claim 1, wherein said sliding frame structure further  
     comprises:
  - a) an upper rectangular frame portion having a  
15   surrounding rim,
  - b) a lower rectangular frame portion adapted to  
     be secured within said cupboard,
  - c) a pair of guides disposed on opposite sides  
     of said lower rectangular frame portion,
  - 20   d) a first pair of wheels disposed on opposite  
     corners of said upper frame portion and adapted to be  
     received within respective ones of said guides for  
     rolling engagement therewith,
  - e) a second pair of wheels disposed on opposite  
25   corners of said lower frame portion remote from said  
     first pair of wheels and adapted to support said  
     surrounding rim on opposite sides of said upper frame  
     portion for rolling engagement therewith, and
  - f) a plurality of slots in said upper frame  
30   portion for receiving said one or more wire frames  
     therewithin.
3.           The modular waste sorting and storage system of  
     claim 2, wherein at least one of said wire frames  
35   comprises a rectangular base portion adapted to be  
     received within said plurality of slots, and a side  
     portion integral with said base portion and extending

generally perpendicular thereto from one side thereof, each of said base portion and side portion having at least one upstanding portion adapted to surround said waste receiving means.

5

4. The modular waste sorting and storage system of claim 3, wherein said waste receiving means is a bin of generally rectangular cross-section.

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5. The modular waste sorting and storage system of claim 2, wherein at least one of said wire frames comprises a pair of centrally hinged generally rectangular portions adapted to be received within said plurality of slots, each of said generally rectangular portions having an upstanding portion adapted to hold

15

said waste receiving means.

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6. The modular waste sorting and storage system of claim 5, wherein said waste receiving means is a bag having a pair handle apertures therein through which a respective one of each said upstanding portion passes for holding said bag.

25

7. The modular waste sorting and storage system of claim 1, further comprising a lid removably pivotally attached to said one or more modular wire frames and adapted to cover said waste receiving means.

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8. The modular waste sorting and storage system of claim 4, further comprising a lid removably pivotally attached to said side portion of said at least one of said wire frames and adapted to cover said bin.

35

9. The wire frame of claim 3, further including means for securing said wire frame to a door of said cupboard.

10.           The wire frame of claim 5, further including means for securing said wire frame to a door of said cupboard.
- 5   11.           The wire frame of claim 9, wherein said waste receiving means is a bin of generally rectangular cross-section.
12.           The wire frame of claim 10, wherein said waste receiving is a bag having a pair handle apertures therein through which a respective one of each said upstanding portion passes for holding said bag.
- 10           12.           The wire frame of claim 10, wherein said waste receiving is a bag having a pair handle apertures therein through which a respective one of each said upstanding portion passes for holding said bag.
13.           The wire frame of claim 9, further comprising a lid removably pivotally attached thereto adapted to cover said waste receiving means.
- 15           13.           The wire frame of claim 9, further comprising a lid removably pivotally attached thereto adapted to cover said waste receiving means.
14.           The wire frame of claim 10, further comprising a lid removably pivotally attached thereto adapted to cover said waste receiving means.
- 20           14.           The wire frame of claim 10, further comprising a lid removably pivotally attached thereto adapted to cover said waste receiving means.
15.           A two-way storage system for separating waste and recyclable matter, comprising a wire rack adapted to be secured to a cupboard door, said wire rack further comprising a pair of rectangular downwardly extending wire portions for receiving respective outside handles of a pair of bags to be supported, a central stabilizer bar for connection between said door and said wire rack, and a centrally disposed further downwardly extending portion having a sheet metal portion thereon defining a pair of oppositely disposed forks for receiving respective inside handles of said pair of bags to be supported.
- 25           15.           A two-way storage system for separating waste and recyclable matter, comprising a wire rack adapted to be secured to a cupboard door, said wire rack further comprising a pair of rectangular downwardly extending wire portions for receiving respective outside handles of a pair of bags to be supported, a central stabilizer bar for connection between said door and said wire rack, and a centrally disposed further downwardly extending portion having a sheet metal portion thereon defining a pair of oppositely disposed forks for receiving respective inside handles of said pair of bags to be supported.
- 30           15.           A two-way storage system for separating waste and recyclable matter, comprising a wire rack adapted to be secured to a cupboard door, said wire rack further comprising a pair of rectangular downwardly extending wire portions for receiving respective outside handles of a pair of bags to be supported, a central stabilizer bar for connection between said door and said wire rack, and a centrally disposed further downwardly extending portion having a sheet metal portion thereon defining a pair of oppositely disposed forks for receiving respective inside handles of said pair of bags to be supported.
16.           The two-way storage system of claim 15, further comprising a lid removably pivotally attached thereto adapted to cover said bags.
- 35           16.           The two-way storage system of claim 15, further comprising a lid removably pivotally attached thereto adapted to cover said bags.

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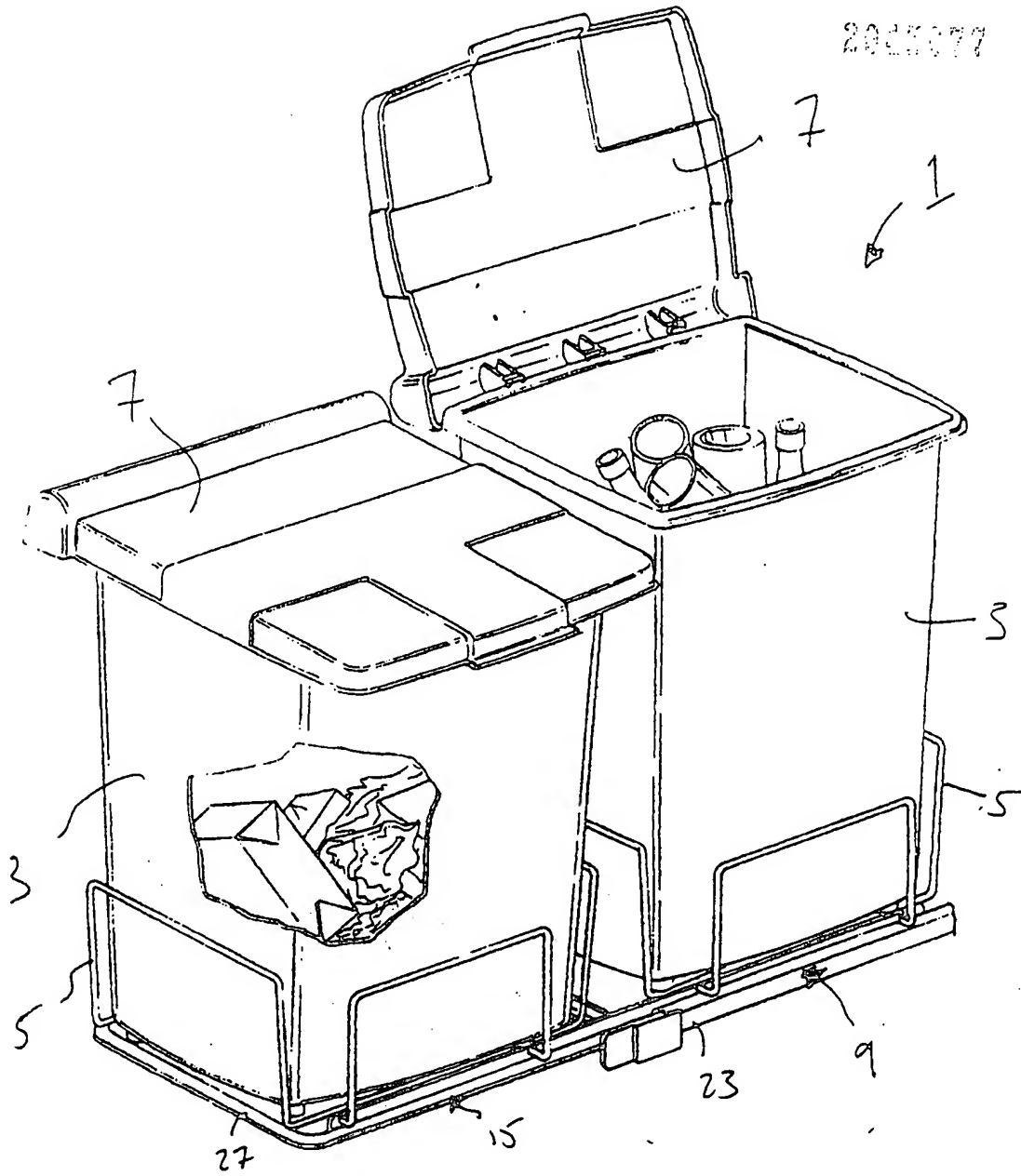


FIG. 1

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Signed: W. J. Curran

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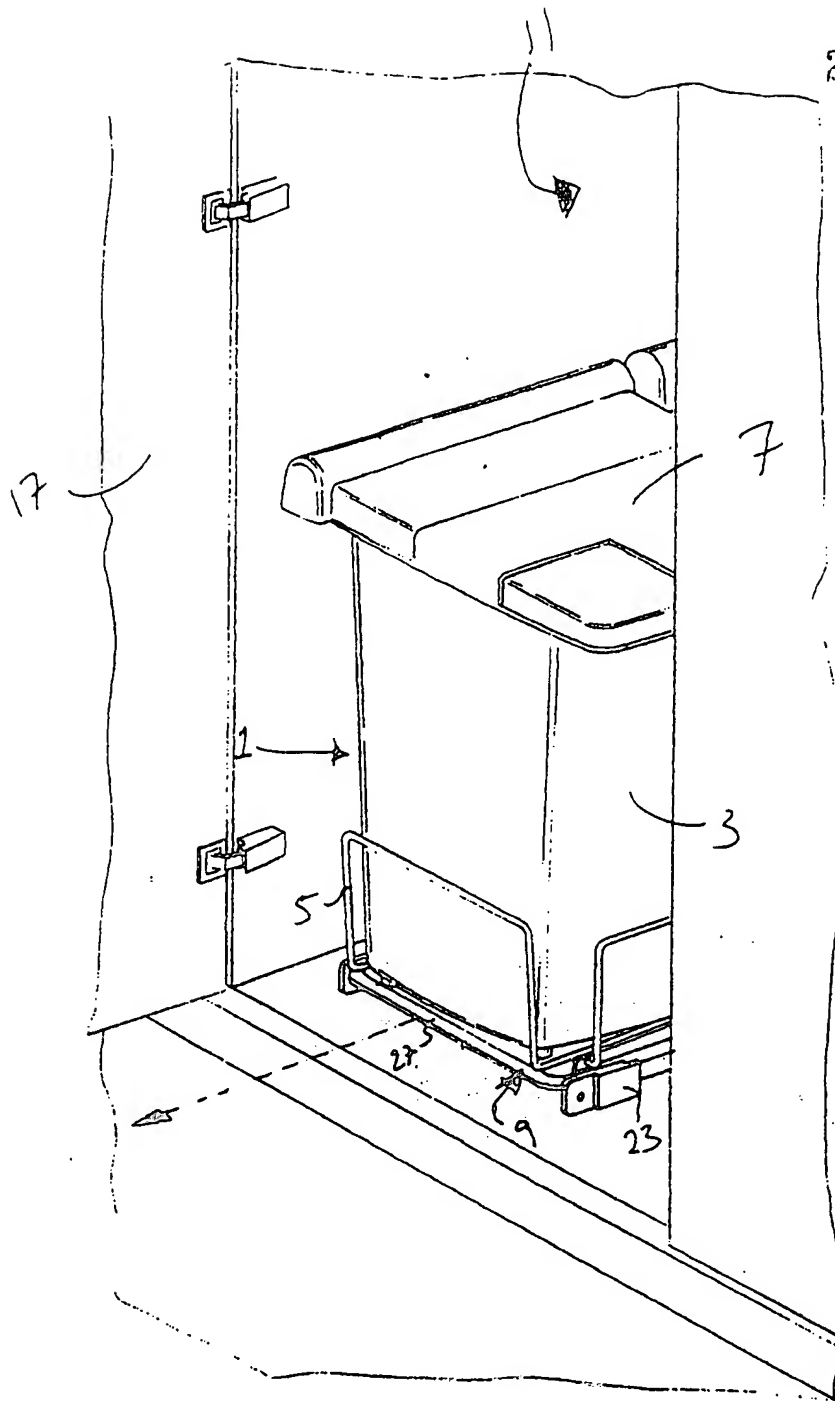
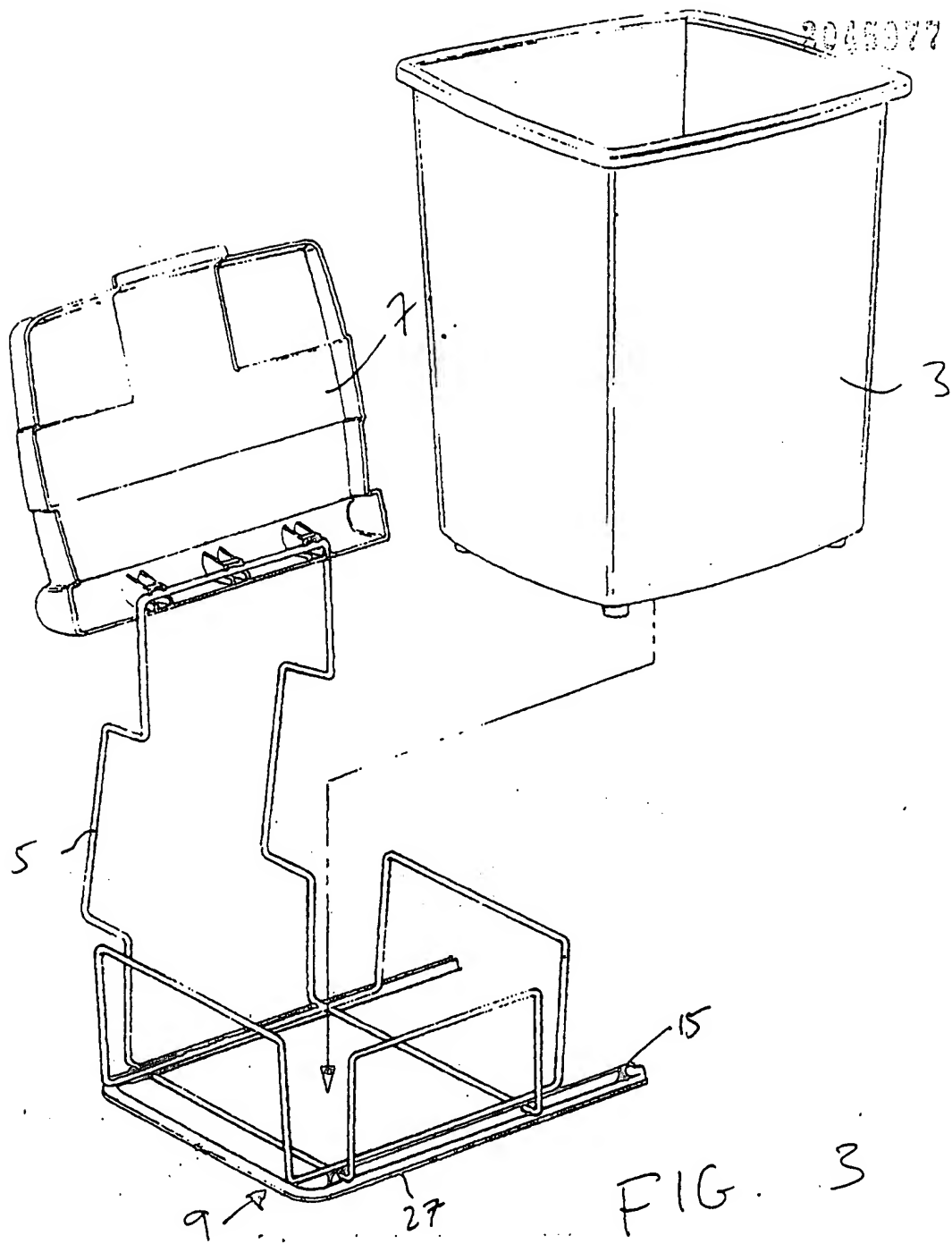


FIG. 2.

Sin 3' H. Lunn



Signed: W. L. Lunn

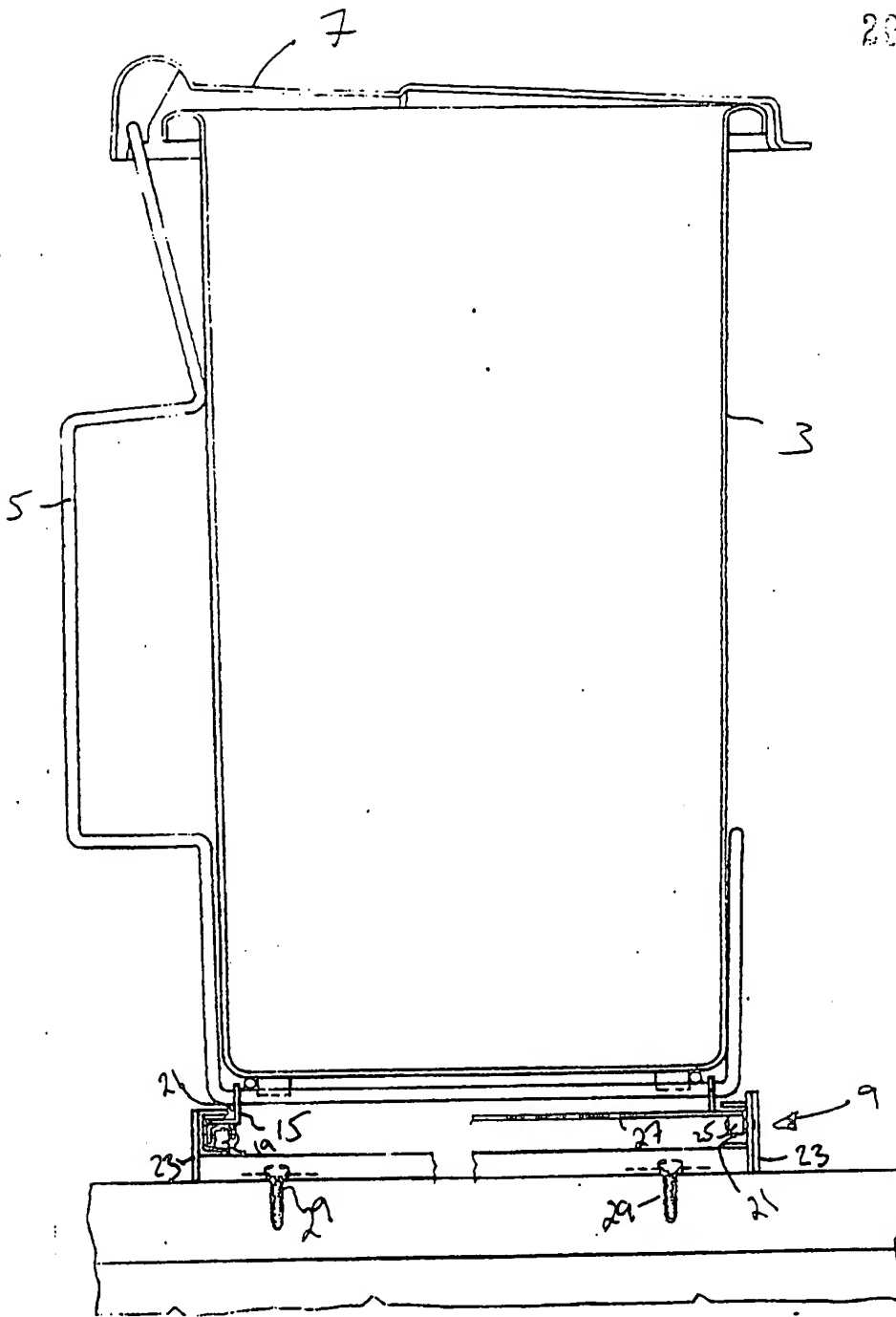


FIG. 4

Signed: *M. L. Lunn*

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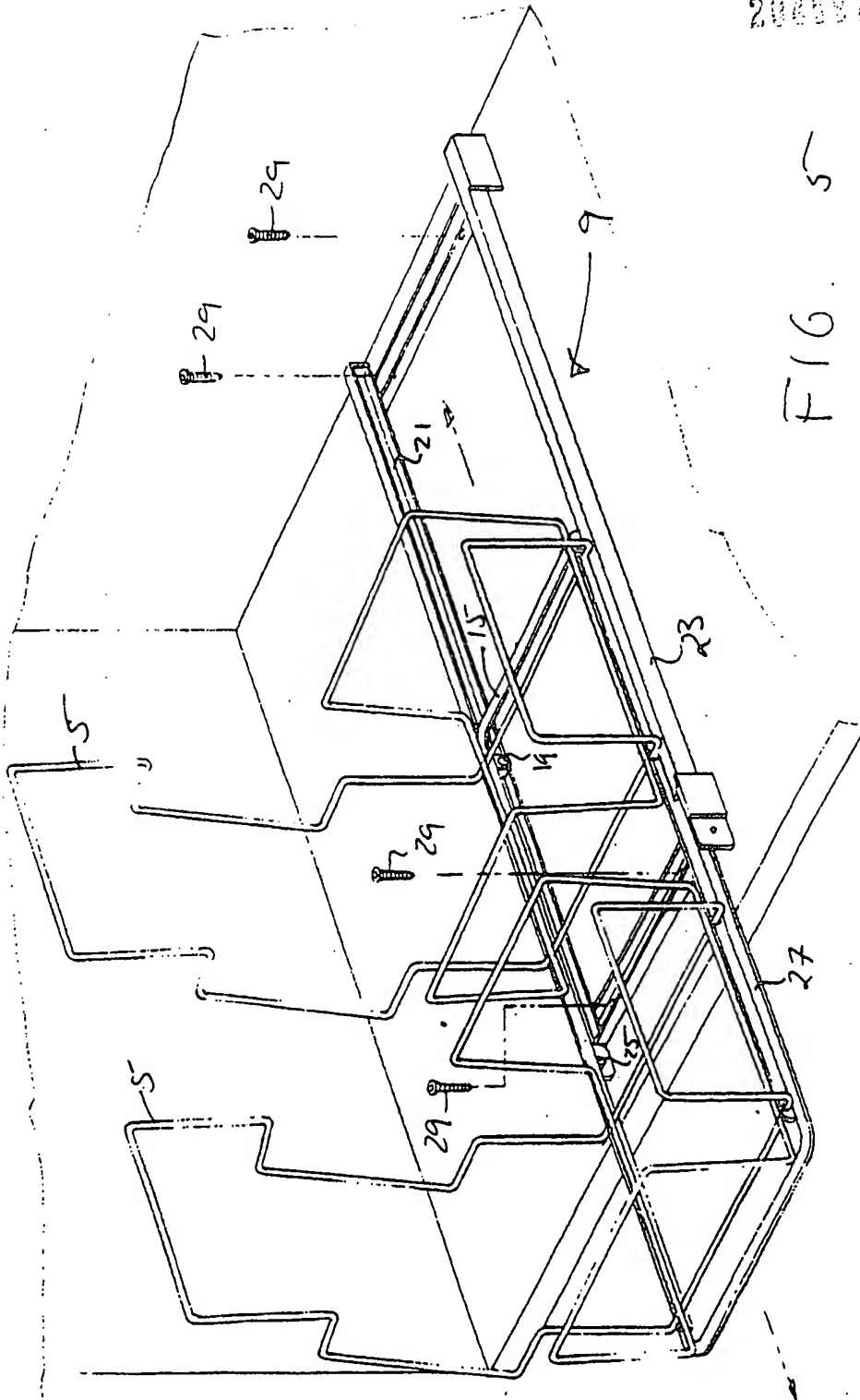
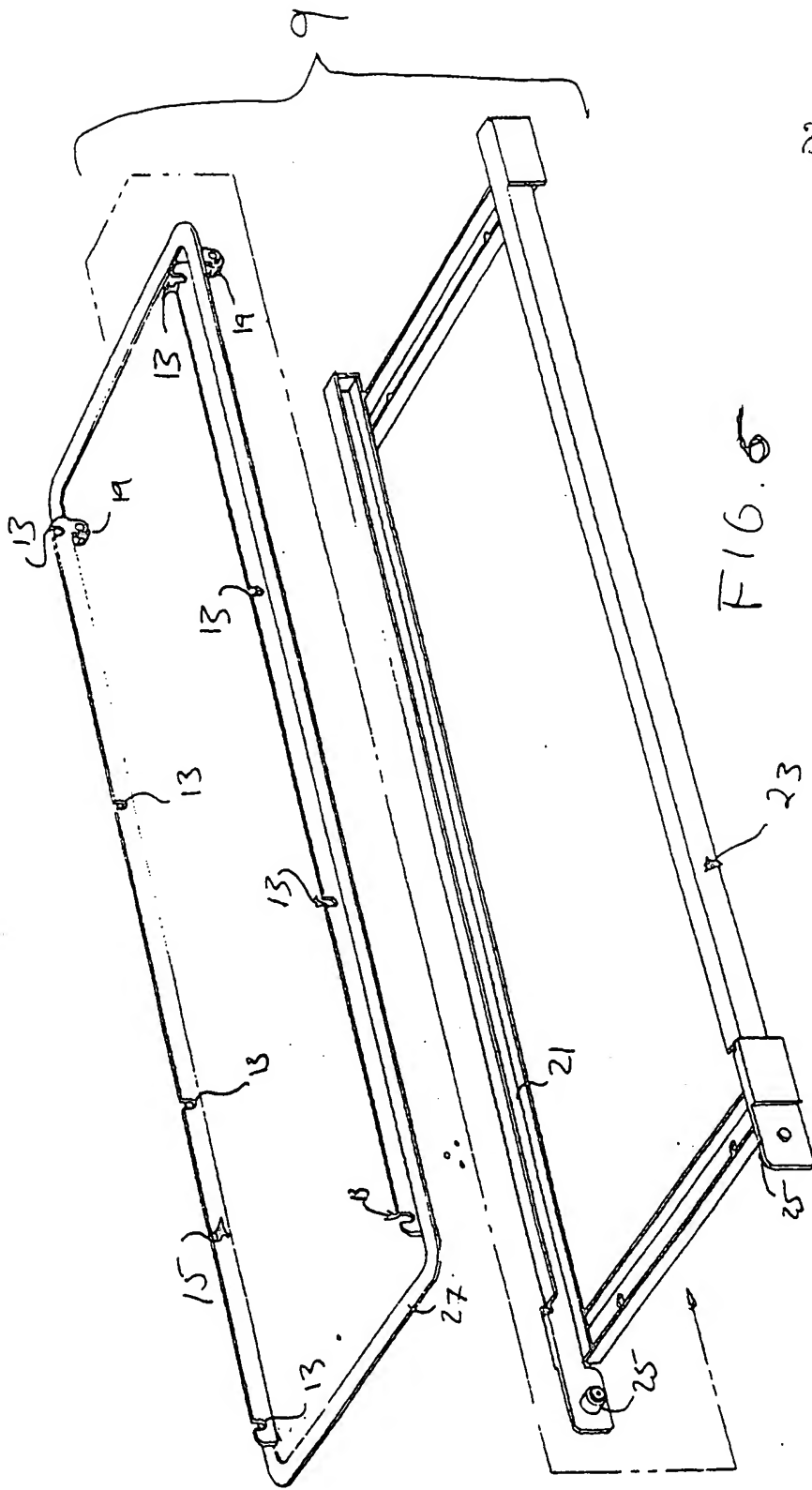


FIG. 5

*See 1st of Summary*





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*See 1 of Summary*

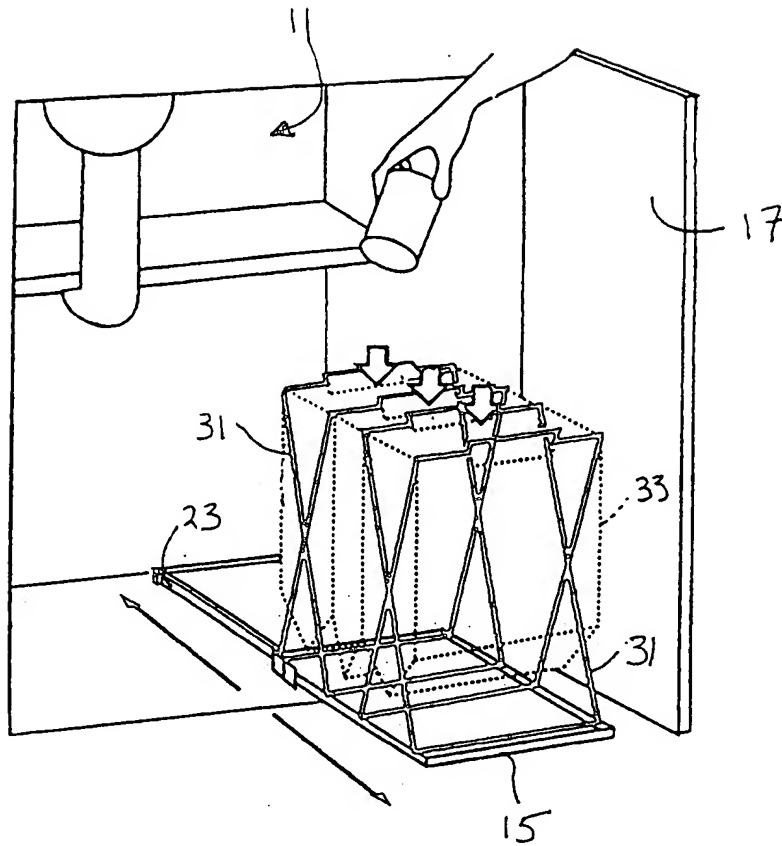


Fig. 7

Simon S. S. S. S.

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Seal of H. L. Lunn

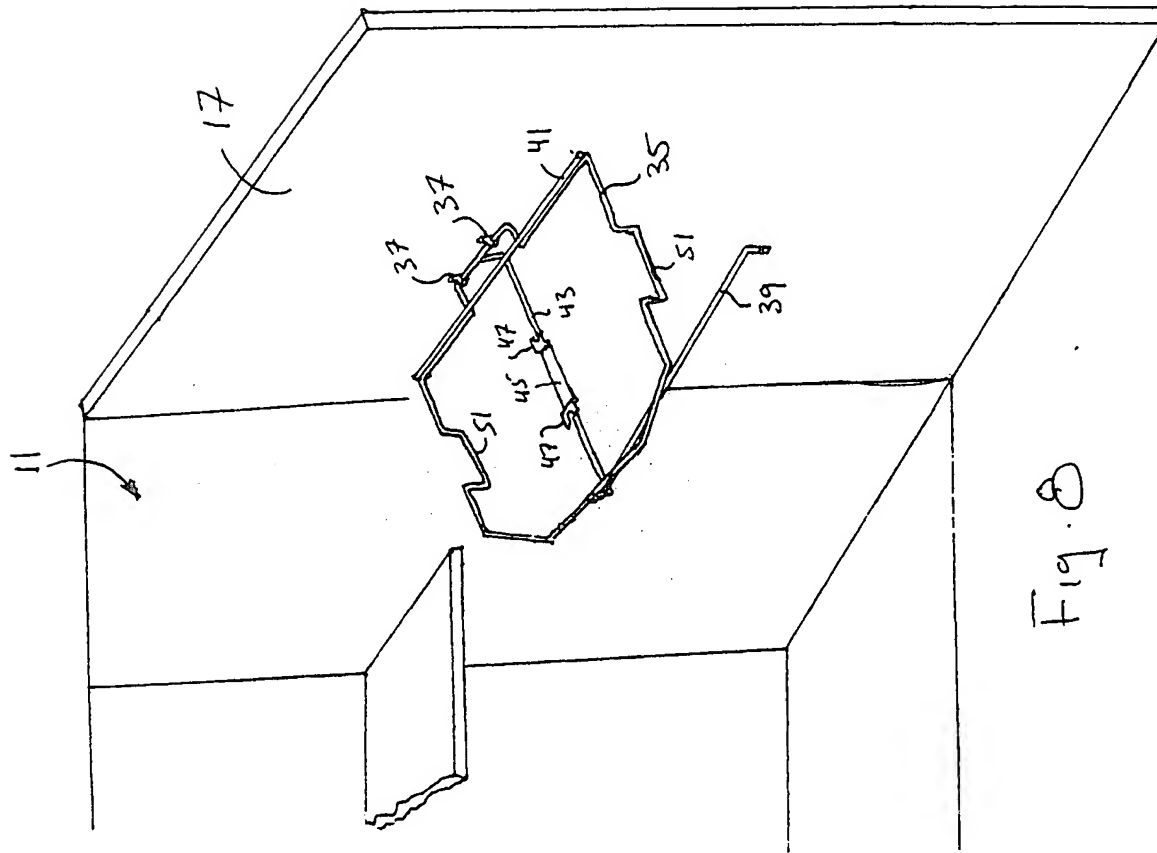


Fig. 8